Space Weather Forecast

Issued on Monday, 16 May 2022 at 01:29 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Minor/Moderate radio blackouts becoming more likely from X-ray flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate over the past 24 hours, with an isolated low level Moderate-class flare at 15/0008 UTC, from an active region beyond the northeast limb. There are a number of sunspot groups on the visible side of the solar disc. Two of these are relatively large but there is little in the way of activity currently with isolated Common class flares being observed. There remain numerous small 'filaments' (arcs of plasma) on the sun. No Earth directed Coronal Mass Ejections (CMEs) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind, as measured by ACE and DSCOVR satellites, has been Elevated for much of the past 24 hours and is related to a coronal hole high speed stream. The magnetic field of the solar wind was often at Moderate strength. The important north-south component showed fluctuating periods of north/south orientation, with the longest period of southward orientation between midnight UTC and 15/0300 UTC. The net effect of these solar wind measures was mostly Quiet to Unsettled (Kp 1 to 3) conditions, but with Active (Kp 4) periods observed between 15/0000-0600 UTC.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be Low to Moderate, with Moderate-class flares becoming more likely, and a slight chance of a Strong-class flare. The flare risk may trend a little higher through the period owing to potentially further active regions rotating around the northeast limb.

Solar Wind / Geomagnetic Activity: No CMEs currently feature in the forecast. Solar winds are anticipated to be decreasing through the period with a mostly Quiet outlook for geomagnetic activity likely as the forecast period progresses.

Energetic Particles / Solar Radiation: Solar radiation storms are unlikely in the period, although there is slight risk of an S1 or greater event, mainly due to the westward advance of the largest and most complex sunspot region currently on the Earth facing disc.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	40	40	50	60
Very Active	R3 to R5 X	No	5	5	10	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	10	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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